ISTEP+ Science Item Sampler Grades 4 & 6
Updated August 2015

Purpose:

The purpose of the item sampler is to provide teachers and students with examples of the different types of questions that will appear on the ISTEP+ science assessment. The types of questions include: multiple choice, constructed response, and extended response. Teachers are encouraged to use this information as a resource to help create other assessments.

Constructed Response (CR) and Extended Response (ER) Items

The ISTEP+ Part 1 assessment contains constructed response and extended response items. These items will require a higher level of thinking, and the extended response items may be slightly more complex. Extended response items, in general, will also take students longer to respond. Both constructed response and extended response items may require students to provide an explanation or justification within the item.

Scoring Rubrics

The scoring rubrics used for the CR and ER items are developed in such a way as to score items more holistically and to report students' scores more accurately. In contrast, previous ISTEP+ rubrics were more analytic in nature and did not always allow for the scoring of student response in a holistic manner. For each CR and ER item, students will receive a score for the content being assessed.

Grade 4 Sample Items

1. A soil sample contains living and nonliving materials. Which material was once living?
   A. small pebbles
   B. sand particles
   C. water droplets
   D. decomposing leaves

2. In order to survive, all animals need
   A. eyes
   B. leaves
   C. light
   D. water

3. When the Rocky Mountains first formed, they were taller than they are today. Identify and describe TWO natural causes that could have caused the Rocky Mountains to become shorter over time.

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4. Amy performed a science experiment in which she followed the following steps:
    A. Fill two pots with the same type and amount of soil
    B. Plant five seeds of the same plant type into each pot
    C. Place Pot A next to a sunny window
    D. Place Pot B in a dark room
    E. Add the same amount of water to each pot every three days

    After 4 weeks, Amy observed the plants in both pots. The plants in Pot A were green, with tall, thick stems. The plants in Pot B were yellow, with tall, thin stems.

    Explain whether or not this is a fair test.

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5. Eric predicted that warm water would boil faster than water at room temperature. He performed an experiment to determine whether water at 40°C boiled faster than water at 20°C. The table below shows his data.

Trial	Starting Temperature (°C)	Amount of Water (L)	Time Needed to Boil (minutes)
A	20	2	9
B	20	2	10
C	20	2	9
D	20	2	9.5
E	40	2	6
F	40	2	5
G	40	2	15
H	40	2	5.5

    Name TWO tools Eric used to complete his experiment.

    _____

    _____

Explain whether or not the data supports Eric's prediction.

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Eric's teacher suggests that Eric communicate his results to other scientists. Explain why it is important for scientists to communicate their results with other scientists.

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Look at the data for Trial G. Describe ONE possible explanation for why this trial has different outcome from the other trials.

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Grade 6 Sample Items

1. Which event is caused by Earth rotating on its axis?
    a. 365 days in a year
    b. four different seasons
    c. one day and one night every 24 hours
    d. the changing of the phases of the moon

2. Jenna rolled a small glass marble and a large glass marble down a ramp at the same time to see if the large marble would roll further than the small one. She repeated this investigation four times. The table below shows her results.

Distances Rolled by Marbles

Trial	Small Marble Distance (centimeters)	Large Marble Distance (centimeters)
1	305	300
2	306	304
3	299	309
4	301	298

Which statement BEST describes the information found in the table?

A. The small marble rolled further than the large marble in trials 2 and 3.
B. The large marble rolled further than the small marble in trials 1 and 4.
C. The difference in distances rolled by the small marble is less than 8 centimeters.
D. The difference in distances rolled by the large marble is less than 8 centimeters.

3. In a food chain, mice feed on grain crops, and snakes feed on mice. Which of these would MOST LIKELY occur in a year when grain crops are more plentiful?
    A. The snake population will increase
    B. The mouse population will decrease
    C. The snake population will not change
    D. The mouse population will not change

4. Ben was playing with a remote-controlled toy truck on a sidewalk. The toy truck travelled 300 centimeters at a speed of 54 centimeters per second.

   Ben then put 50 grams of soil into the bed of the truck and let the truck again travel for 300 centimeters. Describe how the speed of the truck will be affected after adding the soil to the truck. Explain your answer.

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5. Mark is studying the life spans of different animals. Some of the data he found are listed below.
   - Panthers live about 12 years in the wild and about 20 years in a zoo.
   - Giraffes live about 20 years in the wild and about 25 years in a zoo.
   - Gorillas live about 35 years in the wild and about 50 years in a zoo.
   - River otters live about 8 years in the wild and about 21 years in a zoo.

   Use the information Mark gathered to complete the table.

Animal Life Spans

	Life Span in the Wild (years)	

According to the table, which animals live more than 15 years in the wild?

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According to the table, which animal lives almost three times longer in a zoo than it does in the wild?

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Describe ONE possible reason why the animals Mark studied tend to live longer in a zoo than they do in the wild.

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6. Laura performed an investigation about how the amount of time a battery is charged affects the time a flashlight remains lit. The following describes her investigation.

Question:
How does the amount of time a battery is changed affect the time the flashlight gives off light?

Prediction:
A flashlight should give off light for about the same amount of time as the batteries were charged because the energy put into the battery should be about the same as the energy out.

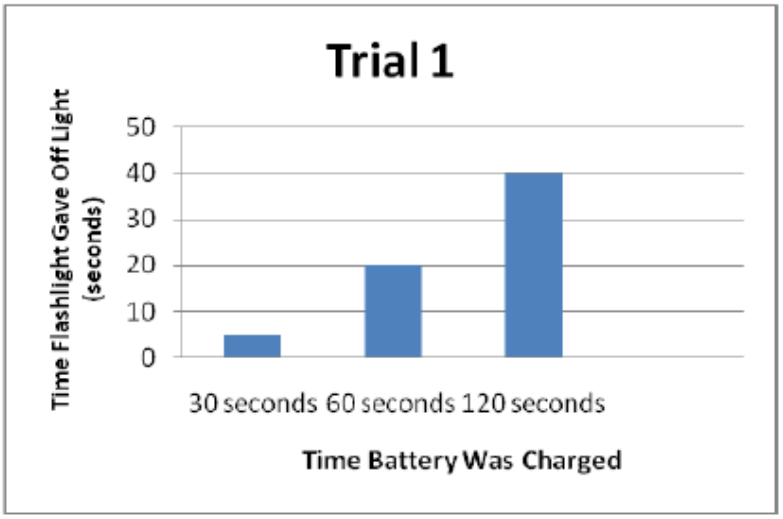
Materials:
uncharged batteries
battery charger
flashlight
timer

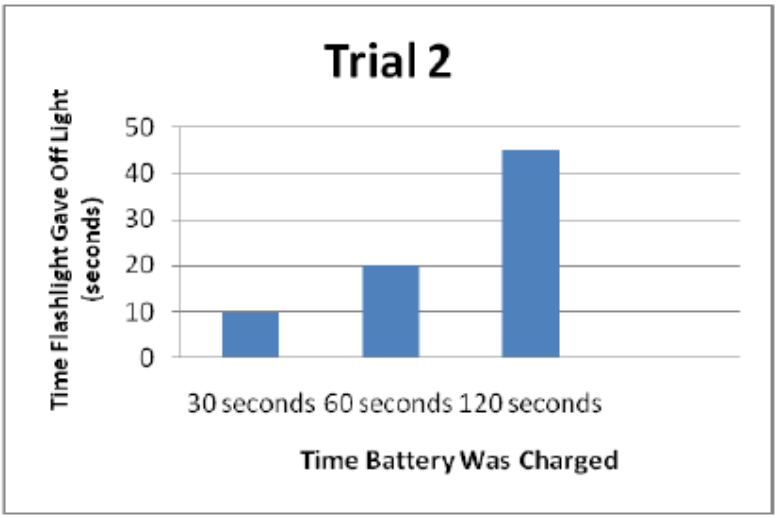
Procedure:

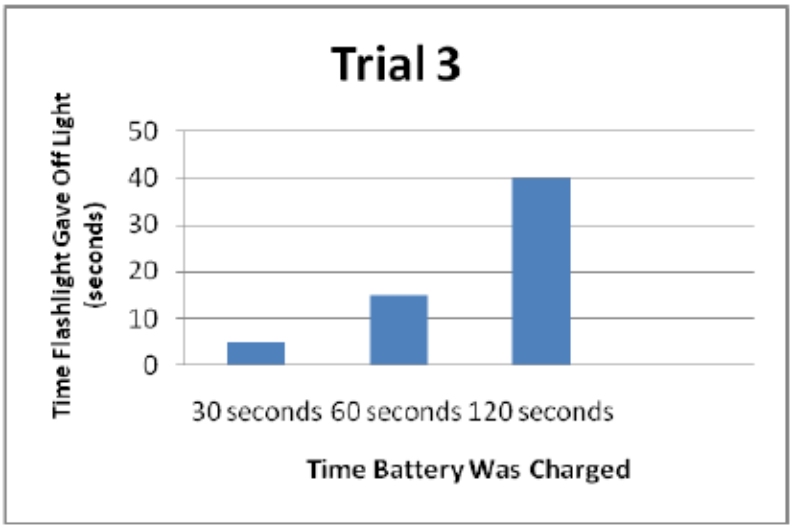
a. Place two uncharged batteries in the charger. Turn on the charger for 30 seconds.
b. Place the two charged batteries into the flashlight.
c. Turn the flashlight on. Measure and record the amount of time that the flashlight is lit.
d. Repeat steps 1-3, increasing the charging time to 60 and 120 seconds.
e. Perform entire experiment two additional times for a total of three trials.

Laura put her results in the data table and created three bar graphs to display the data for each trial. Use the bar graphs to fill in the missing information.

Time Battery Charged (seconds)	**Time Flashlight was Lit (seconds)**		
	Trial 1	**Trial 2**	**Trial 3**
30			
120			







Explain whether or not the results in the table and graphs support Laura's prediction. Use data from the tables and graphs to support your answer.

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Explain why Laura performed three trials for her experiment instead of only one trial.

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